

REMARKS

Claims 1-34 were pending in the present application. Claims 28-34 have been withdrawn from consideration. By virtue of this response, claim 15 has been cancelled, claims 1 and 16 have been amended and new claims 35-39 have been added. Accordingly, claims 1-27 and 35-39 are currently under consideration. Amendment and cancellation of certain claims is not to be construed as dedication to the public of any of the subject matter of the claims as previously presented. No new matter has been added.

Telephone Interview of August 9, 2006

The Applicants thank the Examiner for the telephone interview of August 9, 2006, during which the Applicant described the terms “in-plane radius of curvature”, “edge radius of curvature”, “blade tapering angle”, “streamer and spark discharge”, and “high current arc discharge.” As suggested by the Examiner, the Applicants have indicated (below) where these phrases are described in the specification.

Rejections under 35 U.S.C. § 112

Claims 1-27 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action of May 18, 2006 alleges that the claims include esoteric terms not sufficiently described in the application. In particular, the Office Action objects to the terms “in-plane radius of curvature”, “edge radius of curvature”, “blade tapering angle”, “streamer and spark discharge”, and “high current arc discharge.”

Applicants respectfully disagree.

Each of the five terms identified would be readily understood by one of skill in the art, and therefore one of skill in the art would readily understand the metes and bounds of the claim, as required by 35 U.S.C. §112, second paragraph (see, e.g., M.P.E.P. § 2173). Section 2173.02 makes it clear that claim language must define the patentable subject matter with a reasonable

degree of particularity and distinctness. Furthermore, definiteness of claim language must be analyzed, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) the teachings of the prior art; and (C) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

The five terms alleged to be esoteric and insufficiently described are (A) described (and in many cases illustrated) in the specification, (B) understood in the prior art, and (C) would be understood by one of ordinary skill in the pertinent art at the time the invention was made.

First, the meaning of the phrase “in-plane radius of curvature” is plain on its face, and has been used and understood in prior art references. Furthermore, the phrase is also described and illustrated in the specification. For example, refer to FIGS. 4C-E and paragraph [034] of the specification:

“FIGS. 4C-E show a variety of planform, or in-plane, shapes that are useful in various embodiments of the blade 100. In a canonical embodiment shown in FIG. 4C, the blade 100 takes the form of a disk, and hence the blade 100 is sometimes denoted a disk electrode. In such a blade 100, the first and second blade surfaces each has a radius of curvature in a plane perpendicular to the thickness, (sometimes known as the planar or *in-plane radius of curvature* 160) that is constant at all points on the blade 100. In another canonical embodiment shown in FIG. 4D, the blade 100 has an elliptical planform and the planar radius of curvature 160 (shown only schematically) varies considerably along the blade edge.” Emphasis added.

Thus, one of ordinary skill in the art, upon reading the specification, and observing figures 4C-4E, would understand what is meant by the descriptive phrase “in-plane radius of curvature”.

The meaning of the phrase “edge radius of curvature” is also plain on its face, and has been used and understood in prior art references. Furthermore, the phrase is also described and illustrated in the specification. For example, refer to FIG. 4B, and paragraph [025] of the specification: “FIG. 4B shows a magnified view of the region around the blade edge. The blade tapering angle and the *edge radius of curvature* are shown.” In Fig. 4B, the edge radius of curvature is element 140. See also paragraph [031]:

“Referring now to the drawings, where similar elements are numbered the same, FIG. 4A depicts an electrically conductive blade 100 having a first blade surface 110, a second blade surface 120, and a blade edge 130. In practice, the blade edge 130 is somewhat rounded, *the edge radius of curvature 140 being shown in the magnified view of FIG. 4B*”. Emphasis added.

Thus, one of ordinary skill in the art, upon reading the specification, and observing figure 4B, would understand what is meant by the descriptive phrase “edge radius of curvature”.

The meaning of the phrase “blade tapering angle” is also plain on its face. Furthermore, the phrase is also described and illustrated in the specification. For example, refer to FIG. 4A, and paragraph [032] of the specification:

“A blade tapering angle 150 is the angle of convergence of the first 110 and second 120 blade surfaces as the blade edge 130 is approached. In preferred embodiments the blade tapering angle 150 is less than 45 degrees; in more preferred embodiments the blade tapering angle 150 is less than 30 degrees; and in the most preferred embodiments the blade tapering angle 150 is less than 15 degrees.” Emphasis added.

Thus, one of ordinary skill in the art, upon reading the specification, and observing figure 4B, would understand what is meant by the descriptive phrase “blade tapering angle”.

Applicants acknowledge the Examiner’s suggestion that it would benefit prosecution to provide 3D drawings depicting each of these first three terms, however the Applicants respectfully point out that FIGS 4A and 4B are 3-D depictions of blades illustrating both the edge radius of curvature and the blade tapering angle, and planar (2D) FIGS. 4C-4E best show the in-plane radius of curvature. Applicants are unclear why the Office Action asserts that “[c]urrent 2-D figures 4a-e do not provide sufficient description.”

The meaning of the phrases “streamer and spark discharge” and “high current arc discharge” are well known and understood in the prior art. As would be readily known to one of ordinary skill in the art, “streamer and spark discharge” is often contrasted with “arc discharge” (or “high current arc discharge”). An arc discharge is a highly luminous and intensely hot discharge of electricity. An arc discharge typically initiated when a strong electric force draws electrons from an

electrode, initiating an arc. It is typically a continuous discharge characterized by high current and low voltage across the arc. On the other hand, a spark discharge has a high voltage and short duration. The Examiner is directed to numerous basic electric and electronic textbooks, including online sources that provide exemplary definitions of “spark discharge” and “high current arc discharge”. For example, the Examiner is directed to the online Photonics dictionary (<http://www.photonics.com/directory/dictionary/lookup.asp?url=lookup&entrynum=252&letter=a>), which provides examples of arc discharge, and also exemplary descriptions of spark discharge (see, e.g., <http://amsglossary.allenpress.com/glossary/browse?s=s&p=73>).

In summary, the Applicants feel that these terms would be clear on their face to one of skill in the art, and are also fully described and illustrated in the specification. If the Examiner has any further questions or concerns about these terms, the Applicants would appreciate a telephone interview to resolve any perceived ambiguity.

With regard to claim 23, the Office Action objects that “nowhere in the specification is described ‘an electric field at said cutting portion varies by no more than 50% along the entire length of said cutting portion.’” Applicants disagree, and specifically refer the Examiner to FIG. 1, which illustrates this. As described (see, e.g., paragraph [0022]), FIG. 1 illustrates the electric field along wire electrodes and along the edge of a disc electrode. As shown in FIG. 1, the disc electrode 420 has an electric field that is substantially uniform. Furthermore, this claim language is clear, and would be readily understood by one of skill in the art.

In addition, the specification describes how to achieve an electric field at a cutting portion that varies by no more than 50% along the entire length of said cutting portion. For example, see paragraphs [0018]-[0019] (“...In the combined approach for cutting biological tissue, a burst of pulsed electrical energy is applied to a blade having a blade edge with a relatively small edge radius of curvature. The number of pulses and the energy of each pulse is chosen such that liquid adjacent to the blade cutting portion of the blade edge prior to application of the burst of pulses is, at some time prior to completion of the burst of pulses, vaporized along the entire blade

cutting portion of the blade edge. With the combined approach, *nonuniformities in the electric field along the blade edge are effectively smoothed out.*”).

Thus, the Applicants respectfully request withdrawal of the 35 U.S.C. §112, second paragraph rejections, for at least the reasons provided above.

Rejections under 35 U.S.C. § 103

Claims 1-27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,533,781 to Heim et al. (“Heim”). Applicants respectfully disagree.

The Applicants’ claims cannot be obvious in light of Heim because Heim does not teach or suggest all of the features recited by the claim. Claim 1 (from which claims 2-27 depend) has been amended to clarify that the source of pulsed electrical energy in the claimed system is *configured to apply a plurality of bursts of pulses separated by a burst interval of greater than about 1 ms during which no pulses are present*. This feature was previously present as dependent claim 15.

Heim does not teach or suggest any system including a source of pulsed electrical energy. In fact, Heim teaches only the use of RF (continuous) energy. See, e.g., col. 3, lines 42-44 (“The peak voltages will depend upon the settings of the RF source employed, as may be selected by clinicians for particular surgical procedures”), and col. 9, lines 15-18 (“Source signal line 64 as well as source signal return lines 66a and 66b may all be provided for receiving/returning signals to an RF electrosurgical source generator in a conventional fashion.”).

The Office Action argues that features recited in claims 1-5, 8-10, 14-18 and 20-21, including the dimensions (radius of curvature) and parameters (pulse duration) would have been determined through routine experimentation, however this is not accurate. As mentioned above, a power supply *configured to apply a plurality of bursts of pulses* is neither shown nor suggested in

Heim. Replacing the RF power supply described by Heim with a power supply configured to apply a plurality of bursts of pulses (separated by a burst interval of greater than about 1 ms during which no pulses are present) is not “routine optimization of ranges.” There is no “range” to be optimized in this case.

Thus, the Applicants’ claims 1-27 cannot be obvious over Heim, since Heim does not teach or suggest all of the features recited in the claims, particularly a source of pulsed electrical energy configured to apply a plurality of bursts of pulses separated by a burst interval of greater than about 1 ms during which no pulses are present. The Applicants respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1-27.

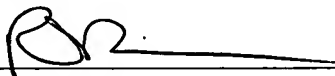
CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 595992000600. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

By 
Rick Shoop
Registration No.: 45,763

MORRISON & FOERSTER LLP
755 Page Mill Road
Palo Alto, California 94304-1018
(650) 813-5804